That a histogram is a type of bar graph that represents frequency distribution of something that happens within given intervals.

**OBJECTIVES:**

- Review the definition of an actuary.
- Explain how actuaries work.
- Understand the concept of cost-benefit analysis.
- Apply cost-benefit analysis to insurance.

**OVERVIEW:**

Actuaries are often referred to as the “mathematicians of business.” They work primarily in the insurance industry and for state and federal government. Actuaries help determine the probability of events occurring and the costs associated with these events. This information is used to set premium rates and determine the cost of possible events for insurance companies.

**Activity 1: Shake It Up with Scatterplots**

1. **WHAT YOU WILL DO:** Discuss the costs and benefits of insurance, and discuss insurance coverage. Explain the concept of premium rates and set their fees in a way that makes sure there’s a profit. (Suggestion: As an added bonus for your students, have them research the actual cost of insurance and determine the probability of different events using tree diagrams. This can be extended to real-world applications by having students research the cost of possible events for insurance companies. They assess the risk of certain perils to determine premium rates.

2. **Materials Needed:** A comprehensive list of goods to be added to the costs of the CDs and DVDs themselves, and a comprehensive list of goods to be added to the cost of possible events for insurance companies.

3. **Questions in the reproducible guide:**

   - How would you estimate the cost of insurance for a tornado?
   - What factors might affect future claim payment amounts?
   - What is the “peril-type” of insurance?
   - How would you estimate costs and make decisions for a tornado?